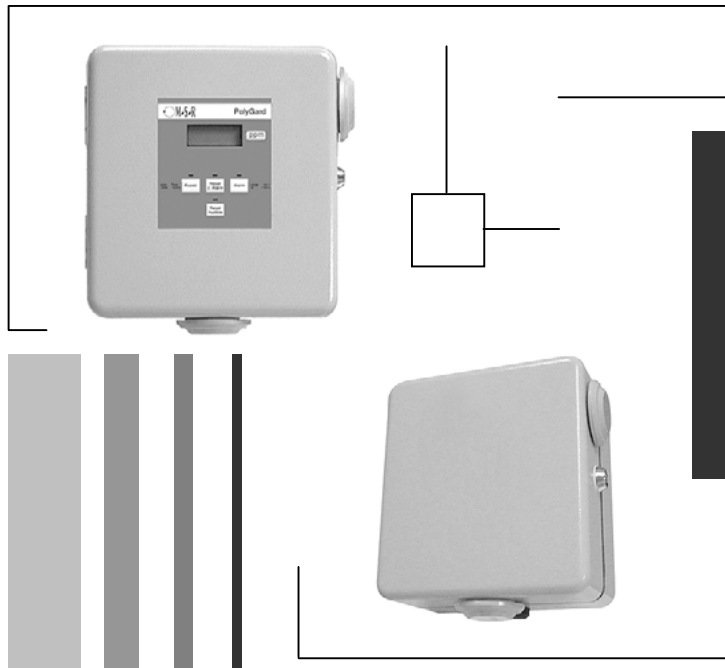




**INTEC**  
CONTROLS



## **PolyGard<sup>®</sup> SPC-1120**

**Ammonia (NH<sub>3</sub>) gas detection and control system**  
serial no. SPC-1120-0 00 0

## **User Manual – Preliminary Edition**

April 05, 2005

## Ammonia (NH<sub>3</sub>) gas detection and control system

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## **Ammonia (NH<sub>3</sub>) gas detection and control system**

### **1 General Overview**

The PolyGard® NH<sub>3</sub> analog single point controller is used for detection of ammonia in the ambient air to warn of the presence of ammonia gas and to control ventilation systems.

### **2 Description**

#### Gas sensing

The sensor portion of the PolyGard® NH<sub>3</sub> analog single point controller is a micro-fuel cell, which is completely sealed. The measurement is a gas-in-liquid chemical reaction rather than a surface area measurement. With no surface area to coat, this sensor retains its sensitivity to ammonia even after prolonged exposure to clean air.

The cell consists of a diffusion barrier, O-ring seal, electrolyte reservoir and three electrodes: sensing, counter and reference. The target gas, ammonia, enters the cell through a diffusion barrier. The chemical process of the measurement is one of oxidation where one molecule of the target gas is exchanged for one molecule of oxygen. The reaction drives the oxygen molecule to the counter electrode, generating a DC microampere signal between the sensing and counter electrodes. This signal is linear to the volume concentration of the sensed gas rather than the partial pressure.

The integrated two-wire transformer converts this DC microampere signal to a standard 4-20 mA signal. In some cases, biasing is required to maintain a voltage differential between the reference and sensing electrode in order to facilitate the necessary reaction in the cell.

The transmitter electronics will provide the necessary bias voltage when configured for one of these sensor types. Most sensors produce a small amount of baseline current in clean air. This is adjusted out with the zero potentiometer on the transmitter.

This oxidation at the electrodes causes wear of the sensor. Typical life for this sensor is approximately five years in normal operation. This will vary somewhat from sensor to sensor, with some working lifetimes less than five years and some greater than 5 years. This wear also changes the characteristics of the sensor, requiring periodic re-calibration. It is recommended that the sensor accuracy be verified every six months and recalibrated as necessary.

#### Relay output

The controller output provides two (2) adjustable trip/setpoints within the sensing range. If the NH<sub>3</sub> concentration exceeds any trip/setpoint value the respective alarms will be activated. The low or high alarm trip/setpoint level correspond to the relay outputs 1K1 (R1) and 1K2 (R2). The output relay R3 can be assigned to either low alarm or high alarm.

The controller has a self-diagnostic to detect any power supply voltage or sensor failures. When a failure occurs it triggers relay output R4. The fail-safe relay R4 will close in case of loss of supply voltage or sensor failure.

#### Analog output

The 1-5 VDC output is linear and represents the range of 0-300 ppm actual sensor proportional value. This signal can be used with any external DDC/PLC control or automation system.

#### Test button

With this button pushed, it simulates the maximum gas concentration. Low and high alarms will be activated and the display will show the maximum value.

## **Manual override of low alarm relay**

Manual switch for “Auto” or “On” function of the relay 1K1 (R1)

Switch position:

Auto = alarm relay 1K1 normal operation

On = alarm relay 1K1 manually on

## **Caution!**

Replacement sensor elements, which are not bias types, are shipped with a tiny spring of wire shorting the sensor and reference electrodes.

This spring MUST BE REMOVED prior to installing the element into the sensor assembly.

## **Optional Display**

3.5 digits display of concentration

LED power:	green	Power on, and normal operation
	red	Failure operation

LED alarm:	orange	Low alarm level active
	red	Low and high alarm level active

Button “Reset 2 <sup>nd</sup> Alarm”	Reset high alarm, when relay is set to latched
--------------------------------------	--

Button “Reset Audible”	Reset internal horn and relay R3 for remote alarm
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## **Optional time delay relay for low alarm**

Time delay relay for delayed activation of relay 1K1

RTE-P11 analog timer = on-delay, adjustable from 0.1 min to 10 min

## 3 Installation

### Note:

- Avoid any force (e.g. by thumb) during operation or installation on the sensor element. This could destroy the element.
- Electronics can be destroyed through static electricity. Therefore, do not work on the equipment without a wrist strap connected to earth ground or standing on conductive floor.

### 3.1 Mounting locations

- The specific weight of ammonia is almost the same as that of air (factor 0.967).
- Location of the SPC-1120 must conform to the layout of the area being monitored.
- Disregard the ventilation ratio! Do not mount SPC-1120 in the center of the airflow. In larger rooms, it might be necessary to install two or more SPC-1120 where there is not adequate air movement. Do not mount in corners or directly in front of air inlets (e.g. doors, windows, open ramps, dampers, etc.). In areas with undefined air movement, it might be necessary to distribute several SPC-1120 in a vertical and horizontal direction over the whole area to be monitored.
- Avoid locations where water, oil etc. may influence proper operation and where mechanical damage might be possible.
- Mounting height is 5 feet to max. 1 foot below ceiling.
- Provide adequate space around SPC-1120 for maintenance and calibration work.

### 3.2 Enclosure

- The door of the enclosure is lockable with supplied key (5/16 in. (8 mm) triangle key).
- Use the provided template for locating position of wall mounting holes.
- Screw the enclosure vertically on wall. (see Fig. 2, page 18).
- When wiring is completed, put back the wire track cover and close the door of the enclosure. (see Fig. 1, page 17).

## 4 Electrical Connection

### 4.1 Instructions

**Note:**

Electrostatic discharge (ESD) may damage electronic components. During wiring, open the cover only when completely grounded via grounding strap or standing on conductive floor.

- Connections should be made without any power applied to conductors.
- Installation of the electrical wiring should be according to the connection diagram and only performed by a trained specialist.
- For the 1-5 VDC analog output signal use shielded cable to avoid any influence from external interference.
- Recommended cable: 18 AWG shielded, maximum resistance 20.8 Ω/1000 ft (73 Ω/1000 m)
- Cable for power and relay outputs do not need to be shielded.

#### Power terminal block X1

Connector H	120 VAC 50/60Hz (24V AC/DC without transformer)
Connector N	0 VAC/DC
Connector G	Earth ground

#### Motherboard terminal strip X2

Connector 1	1-5 VDC sensor output signal (common)*
Connector 2	1-5 VDC sensor output signal (positive)
Connector 3	Power supply 24 VAC
Connector 4	0 VAC/DC
Connector 5	Power supply 24 VDC (19 - 28 VDC)
Connector	

**\* Note:**

When the SPC analog output signal is connected to an external controller, the controller's analog input must provide isolation for the 1-5 VDC signal. If the 1-5 VDC signal is used, then remove Jumper JP1 located on the motherboard.

#### Motherboard terminal strip X3 (relay output without optional time delay relay 1K1):

Connector 1-2	R1, low alarm relay activates the 1K1 relay via internal wiring	
Connector 3	NO	R2, high alarm relay activates the 1K2 relay via internal wiring
Connector 4	NC	
Connector 5	COM	
Connector 6-7	R3, potential free contact for remote alarming	
Connector 8-9	R4, potential free contact for remote fail-safe alarming	

#### Low alarm relay socket 1K1 (DPDT)

Contact set 1 of DPDT	Contact set 2 of DPDT	
Connector 5	Connector 8	NO
Connector 1	Connector 4	NC
Connector 9	Connector 12	COM

**High alarm relay socket 1K2 (DPDT)**

Contact set 1 of DPDT	Contact set 2 of DPDT	
Connector 5	Connector 8	NO
Connector 1	Connector 4	NC
Connector 9	Connector 12	COM

**Optional low alarm time delay relay socket 1K1 (DPDT)**

Contact set 1 of DPDT	Contact set 2 of DPDT	
Connector 6	Connector 3	NO
Connector 5	Connector 4	NC
Connector 8	Connector 1	COM

**4.2 Wiring connection**

Static electricity (see section 4.1).

- Open the door of the enclosure.
- Pull cables via the conduit openings into the enclosure, and connect cable leads to the appropriate terminal connectors.

## 5 Start-up Operation

Only trained technicians should perform the following:

- Check mounting location.
- Check power voltage.
- Check and/or select the appropriate jumpers for remote alarm function, relay R3 (see section 5.5, motherboard jumper selection table).
- Check and/or select the appropriate jumper for failure function, relay R2 (see section 5.5, motherboard jumper selection table).
- Check and/or select the appropriate jumper for latched function, relay R2 (see section 5.5, motherboard jumper selection table).
- Check and/or adjust trip/setpoints for low and high alarm levels (see section 5.1, motherboard potentiometers R31 and R32).
- Check and/or put switch into "Auto" position, manual override of low alarm.
- Verify sensor/transmitter operation by measuring approximately 200 mV (about 0 ppm NH<sub>3</sub>) on sensorboard terminal MP1 and MP2.

Required instruments to start-up and calibrate the SPC:

- Test gas bottle with synthetic air.
- Test gas bottle with 300 ppm NH<sub>3</sub>.
- Gas pressure regulator with flow meter to control the gas flow at 300 ml/min.
- Sensor head calibration adapter with tubing.
- Digital voltmeter with a range of 0-2 VAC and 0-10 VDC, accuracy 1%
- Small screwdriver.

**Note:**

Please observe proper handling procedures for test gas bottles!

### 5.1 Set trip/setpoints

#### 5.1.1 Set low and high trip/setpoints with optional digital display

- Set display jumper on displayboard into position "JP1" to "JP 1.2". This will provide a display value with +/- sign.

Set low trip/setpoint

- Set mode-operating switch "S1" on displayboard into position 1 (far left position). The digital display indicates the low trip/setpoint value.
- Adjust the low trip/setpoint with potentiometer "R31" on the motherboard. The trip/setpoint value can be read on the digital display.

Set high trip/setpoint

- Set mode-operating switch "S1" on displayboard into position 2 (second position from the left). The digital display indicates the high trip/setpoint value.
- Adjust the high trip/setpoint with potentiometer "R32" on the motherboard. The trip/setpoint value can be read on the digital display.
- Set mode-operating switch "S1" on displayboard into position 4 (far right position). This is the normal operating mode (see Fig. 5, page 18).
- Set display jumper on displayboard back into position "JP1" to "JP1.1". This provides a display value without any +/- sign.

## 5.2 Select switching differential of the trip/setpoints

Individual switching differentials can be selected per trip/setpoint via jumpers “JP6” and “JP8” on the motherboard, either 4% or 10% differential of full transmitter range (see section 5.5, motherboard jumper selection table). For example, with factory standard range 0-300 ppm NH<sub>3</sub>, differential = 10 ppm.

## 5.3 Calibration

### Note:

If calibration is necessary, the sensor element must be powered and be fully stabilized for at least 1 hour.

### Zero adjustment (After sensor warm-up. Min warm-up 12 hours.)

Zero-point calibration (4mA):

- Connect digital voltmeter to test pins – and + at sensorboard (with a range selected that will display 2 VDC max.).
- Connect the calibration adapter to sensor element.
- Apply sensor element zero calibration gas, (300 ml/min; 14.5 psi ± 10%), or other clean air source.
- Wait two minutes until the signal is stable; adjust signal with zero potentiometer “P0” until the signal is 200 mV ± 2 mV and stable (sensorboard).
- Remove calibration adapter carefully by turning lightly.

### Span adjustment

#### Note:

NH<sub>3</sub> calibration gas is toxic; never inhale the gas!

Symptoms: Dizziness, headache and nausea.

Procedure if exposed: Bring into fresh air at once, consult doctor.

- Connect calibration adapter to the sensor element.
- Apply sensor element span calibration gas (300 ppm NH<sub>3</sub>), (300 ml/min; 14.5 psi ± 10%).
- Wait two minutes until the signal is stable, adjust signal with span potentiometer “P1” until the signal reads the appropriate mVDC (± 3 mV, see calculation for control voltage 5.3.1) and is stable (sensorboard).
- Remove calibration adapter with a careful light turn. Inspect the seating of the sensor element!

### 5.3.1 Control span voltage calculation

$$\frac{800 \text{ (mV)} \times \text{test gas concentration (ppm)}}{\text{Sensing range NH}_3 \text{ (ppm)}} + 200 \text{ (mV)}$$

#### Example

Sensing range NH <sub>3</sub> concentration	300 ppm
Test gas concentration	300 ppm
Control voltage	1000 mV

$$\frac{800 \text{ (mV)} \times 300 \text{ (ppm)}}{300 \text{ (ppm)}} + 200 \text{ (mV)} = 1000 \text{ mV}$$

## 5.4 Calibration of digital display range (optional display)

**Note:**

The display range is factory set and normally does not require any field adjustment. Adjustment can only be made when the sensorboard test pins "MP1" and "MP2" read 200 mV. This represents a 0 ppm NH<sub>3</sub> value.

Calibrate maximum display range of 300 ppm NH<sub>3</sub>

- Connect digital voltmeter to test pins "J3+" and "J4-" on the displayboard with a range selected that will display 300 mVDC maximum.
- Adjust the maximum display range voltage with potentiometer "R31" on the displayboard until the signal reads 120 mVDC  $\pm$  1 mVDC.

Calibrate zero point display of 0 ppm NH<sub>3</sub>

- Adjust the zero point with potentiometer "R32" on the displayboard until the digital display reads 0 ppm.

### 5.5 Motherboard jumper selection table

Function	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Element	Factory Set
1-5 VDC signal for external use	X		Jumper JP1	
1-5 VDC not used		X		<input checked="" type="checkbox"/>
Relay R3 will be active with low alarm		X* <sub>1</sub>	Jumper JP3	<input checked="" type="checkbox"/>
Relay R3 will be active with high alarm		X* <sub>1</sub>	Jumper JP4	
Relay R3 will be not active		X* <sub>1</sub>	Jumper JP5	
System failure also activates high alarm		X	Jumper JP9	
System failure does not activate high alarm	X			<input type="checkbox"/>
High alarm without latch function		1-2	Jumper JP12	<input checked="" type="checkbox"/>
High alarm with latch function		2-3		
With optional digital display	X		Jumper JP2	<input checked="" type="checkbox"/>
Without optional digital display		X		<input checked="" type="checkbox"/>
Switching differential of low trip/setpoint, 4%		1-2	Jumper JP6	<input checked="" type="checkbox"/>
Switching differential of low trip/setpoint, 10%		2-3		
Switching differential of high trip/setpoint, 4%		1-2	Jumper JP8	<input checked="" type="checkbox"/>
Switching differential of high trip/setpoint, 10%		2-3		
Internal function		X	Jumper JP7* <sub>2</sub>	<input checked="" type="checkbox"/>
Internal function		2-3	Jumper JP10* <sub>2</sub>	<input checked="" type="checkbox"/>
Internal function		1-2	Jumper JP11* <sub>2</sub>	<input checked="" type="checkbox"/>

Note:

\*<sub>1</sub> Only one of the three jumpers can be installed.

\*<sub>2</sub> Do not change the factory jumper position setting.

### 5.6 Displayboard jumper selection table

Function	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Element	Factory Set
Display value without sign +/-		X	Jumper JP1.1	
Display value with sign +/-		X	Jumper JP1.2	<input checked="" type="checkbox"/>
Button "Reset 2 (high) alarm" enabled		X	Jumper JP12	<input checked="" type="checkbox"/>
Button "Reset 2 (high) alarm" disabled	X			
Internal function		X	Jumper JP7 <sup>1</sup>	<input checked="" type="checkbox"/>

<sup>1</sup> Do not change the factory jumper position setting

## **6 Inspection and Service**

### **6.1 Inspection**

Inspection and service of the single point controller should be done by a trained technician and executed on a periodic interval. It is recommended that the sensor operation be verified at least every six months.

### **6.2 Calibration sensor**

(See part 5.3)

- Service at periodic intervals is to be decided by the person responsible for the gas detection system.
- If span calibration voltage of 1000 mV (see note below) is no longer attainable when applying 300 ppm ammonia in air, then the sensor element has to be replaced. After the sensor element has been replaced, a calibration is required.

**Note:**

If using a different level of span test gas ppm, or different sensor range, then the mV needs to be calculated.

### **6.3 Replacing sensor element**

Static electricity ( see section 4.1).

Sensor should always be installed without power applied, remove fuse "1F1".

- Unplug old sensor element out from the sensorboard.
- Take new sensor element out of original packing and remove the shorting wire on the sensor element contacts.
- Plug sensor element in the connector X4 at the sensorboard.
- Calibrate (see section 5.3).

## 7 Troubleshooting

### 7.1 Diagnostics

Trouble	Reason	Solution
No indication of power (optional with display),  and/or  test button does not function	Power not applied	Measure power on terminal block X1 terminal H / N for 120 VAC (24 VAC/DC)
	Fuse failure	Check miniature fuses 1F1, 1F2 or F1 on motherboard
	Interruption in the cable connection between motherboard and displayboard	Check cable connections for tight fit
	Failure on displayboard	Replace displayboard
No indication value at digital display	Mode operating switch S1 on displayboard, position 3 = OFF	Set switch in position: 1 = low trip/setpoint 2 = high trip/setpoint 4 = sensed value
	Interruption in the cable connection between motherboard and displayboard	Check cable connections for tight fit
	Failure on displayboard	Replace displayboard
Cannot calibrate sensorboard	Interruption in the cable connection between motherboard and displayboard	Check cable connections for tight fit
	Sensor sensitivity too low	Replace sensor
	Failure on sensorboard	Replace sensorboard
Cannot set trip/setpoints	Trip/setpoint values are set too high	Adjust trip/setpoint values again (see section 5.1 to 5.3)
	Failure on motherboard	Replace motherboard
Fail-safe alarm	Interruption of sensor cable or sensor sensitivity too low	Check cable connection, or if necessary replace and calibrate sensor
	Control span voltage lower than 200mV	Recalibrate the sensor, or if necessary replace sensor element

## 8 Cross-sensitivity Data

The values given in the table are standard values. They are valid only for new sensors and can range about  $\pm 30\%$ . The table does not claim to be complete. The sensor may also be sensitive to other gases.

Gas	Chemical symbol	Concentration – Test gas	Deviation the measured value ppm NH <sub>3</sub>
Chlorine	Cl <sub>2</sub>	10 ppm	$\leq 1$
Cyan Hydrogen	HCN	25 ppm	$\leq 5$
Carbon Dioxide	CO <sub>2</sub>	1 Vol. %	$\leq 5$ (-)
Carbon Monoxide	CO	115 ppm	$\leq 1$
Methane	CH <sub>4</sub>	30 Vol. %	$\leq 3$
Methanol	CH <sub>3</sub> OH	170 ppm	$\leq 35$
Sulphur Dioxide	SO <sub>2</sub>	20 ppm	$\leq 1$
Sulphur Dydrogen	H <sub>2</sub> S	20 ppm	$\leq 90$
Nitrogen Dioxide	NO <sub>2</sub>	20 ppm	$\leq 15$
Hydrogen	H <sub>2</sub>	1 Vol. %	$\leq 30$

## 9 Specifications

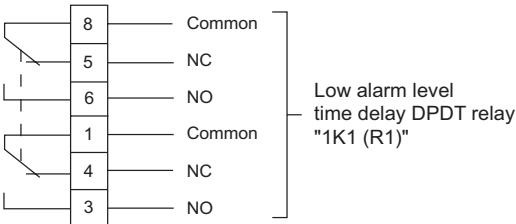
<b>Electrical</b>	
Power supply:	120 VAC, -10%/ +20%, 50/60 Hz, or 24 VAC/DC, -10%/ +20%, without built-in transformer resettable 1.6 A fuse
Power consumption:	0.6 A (15 VA), max.
- w/optional heater	1.6 A (39 VA), max.
RFI/EMI protection	5.0 W @ 1ft. (0.31 m) radiated
<b>Sensor Performance</b>	
Gas detected	Ammonia (NH <sub>3</sub> )
Sensor element	Electrochemical, diffusion
Range	0-300 ppm factory set
Accuracy	3 ppm
Repeatability	2 ppm
Long term output drift	< 0.4% signal loss/month
Response time	T <sub>50</sub> < 40 sec.
Sensor life expectancy	1-2 years, normal operating environment
Sensor coverage	2,000-3,000 sq.ft.
<b>Installation Location</b>	
Mounting height	1 foot below ceiling
<b>Relay outputs</b>	
Low alarm (1K1)	DPDT, 10 A (optional time delay relay, 10 A) potential free, 250 VAC
High alarm (1K2)	DPDT, 10 A, potential free, 250 VAC max.
Remote alarm (R3)	SPST, 5 A, potential free, 250 VAC max.
Fail-safe (R4)	SPST, 5 A, potential free, 250 VAC max.
<b>Type of Control</b>	
General	Two-stage, low and high alarm Trip/setpoints
Trip/setpoints	
- Low alarm	35 ppm NH <sub>3</sub> (factory calibrated, user adjustable)
- High alarm	75 ppm NH <sub>3</sub> (factory calibrated, user adjustable)
Switching differential	4% or 10% of sensing range, selectable
Analog output signal	1-5 VDC for external controller (the controller's analog input must provide isolation for the 1-5 V DC signal), load > 50 kOhm
Audible alarm	90 dB, enabled or disabled, selectable
<b>Visual Indications and Reset Push Buttons, optional</b>	
Digital display	3.5 digit, ppm reading
Power/operating status LED	Green = power on / Red = failure
Alarm status LED	Orange = low alarm / Red = high alarm
Reset 2 <sup>nd</sup> alarm button	LED on = w/high alarm on (only w/latched relay configuration)
Reset audible button	LED on = w/internal horn and/or relay R3 for remote alarm is on
Alarm acknowledgement / reset function	Low alarm: auto reset High alarm: auto reset or manual reset, selectable

<b>Operating Environment</b>	
Working temperature	32 °F to 104 °F (0 °C to + 40 °C)
Storage temperature	-4 °F to 104 °F (-25 °C to + 40 °C)
Humidity	15 to 95% RH non-condensing
Pressure range	Atmospheric ±10%
<b>Optional</b>	
<b>Heater, built-in</b>	For low temperature environment
Ambient temperature	-22 °F to 104 °F (-30 °C to 40 °C)
Thermostatic control	32 °F (0 °C) ± 5 °F (3 °C)
<b>Physical Characteristics</b>	
Enclosure material	Steel case
Enclosure color	Light beige
Protection	NEMA 4 (IP 55)
Installation	Wall (surface) mounted
Dimensions, enclosure (HxWxD)	9.06 x 8.27 x 5.6 in. (230 x 210 x 142 mm)
Dimensions, splash guard (HxDia.)	0.63 x 2.56 in. (16 x 65 mm)
Cable entry	3 holes for ½ in. conduit, covered
Wire connection	Terminal blocks, screw type for lead wire
Wire size	Min. 24 AWG (0.25 mm <sup>2</sup> ) max. 14 AWG (2.5 mm <sup>2</sup> )
Weight	8.8 lbs. (4.0 kg)
<b>Approvals/Listings</b>	
- unit  - relays - transformer	CE
	VDI 2053 (pending)
	EMV Compliance 89/336/EWG
	UL Recognized, CSA Certified, TÜV
	UL Listed, CSA Certified
<b>Warranty</b>	
Two years material and workmanship	

## 10 Wiring Configuration and Enclosure Dimensions

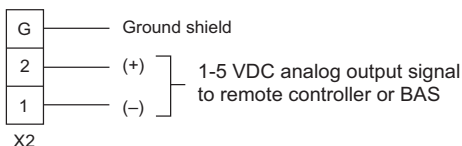
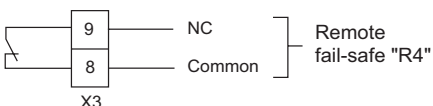
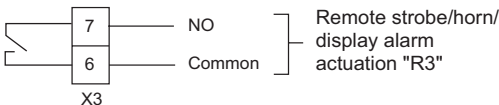
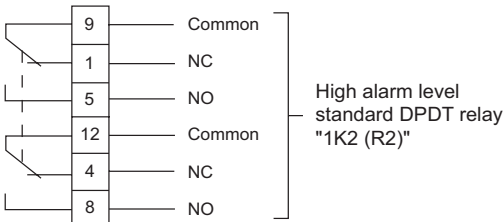
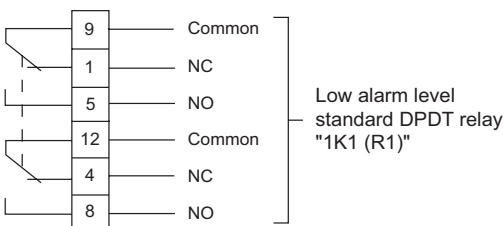
Wiring Configuration Fig. 1

Low alarm level option, with time delay relay (instead of standard relay)



NC	NO	Low Alarm Time Delay Relay 1K1 (R1)	coil	C	RTE-P11
NC	NO		coil	C	

Note: NC-NO connection is reversed on the relay socket compared to the standard relay

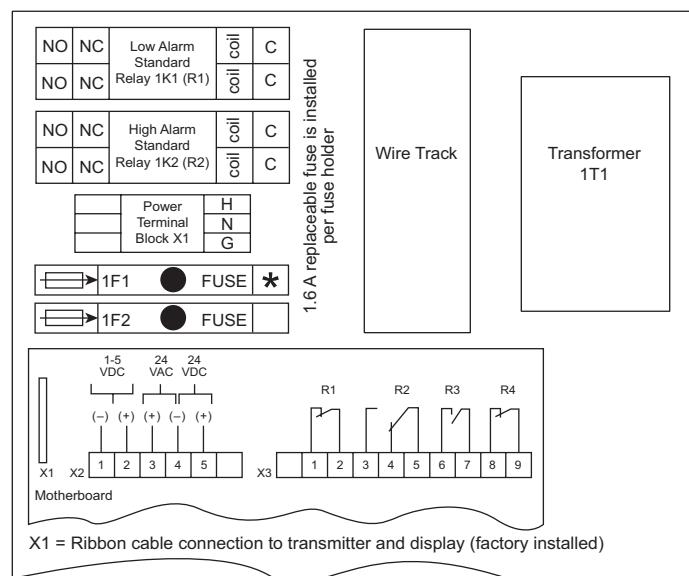


Relay contact positions 1K1 (R1), 1K2 (R2), R3 and R4:

- Power off, as drawn
- Power on and no alarm condition, as drawn, and R4 is open
- Power on and alarm condition for 1K1 (R1), 1K2 (R2) and R3, contacts are closed between common and NO, and R4 stays open
- Power loss or system failure, R4 is closed

**Recommended**

- Twisted, shielded wire for 1-5 VDC output signal
- Grounded housing

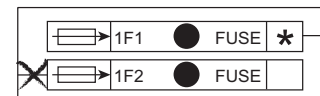


Power terminal block "X1"

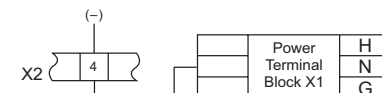
Gray	H	AC hot	120 VAC or 24 VAC/DC power supply
Blue	N	AC neutral	
Green/yellow	G	Earth ground	

\* With 24 VAC/DC power supply:

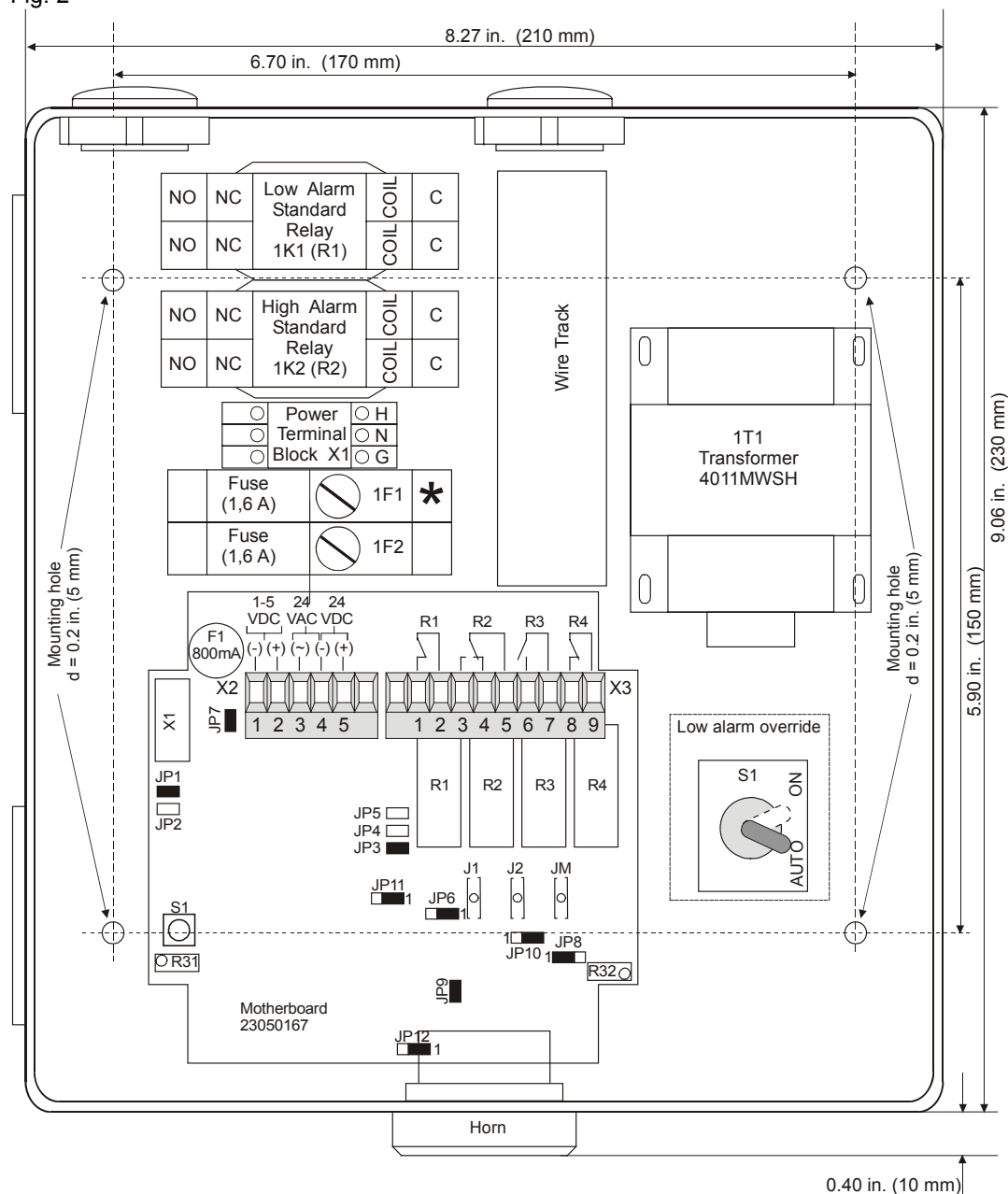
- Remove factory installed transformer "1T1" and transformer wires
- Disconnect lead wire from "1F2" fuse block terminal and connect to "1F1 \*(right hand)" fuse block terminal



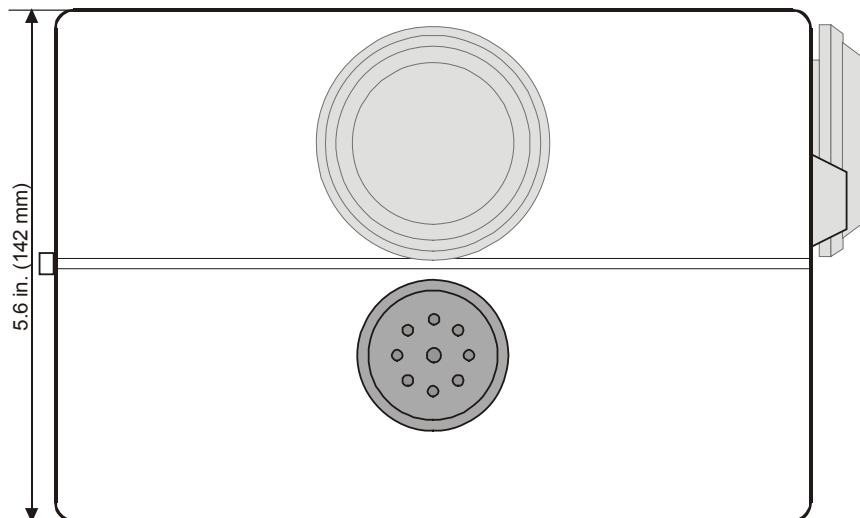
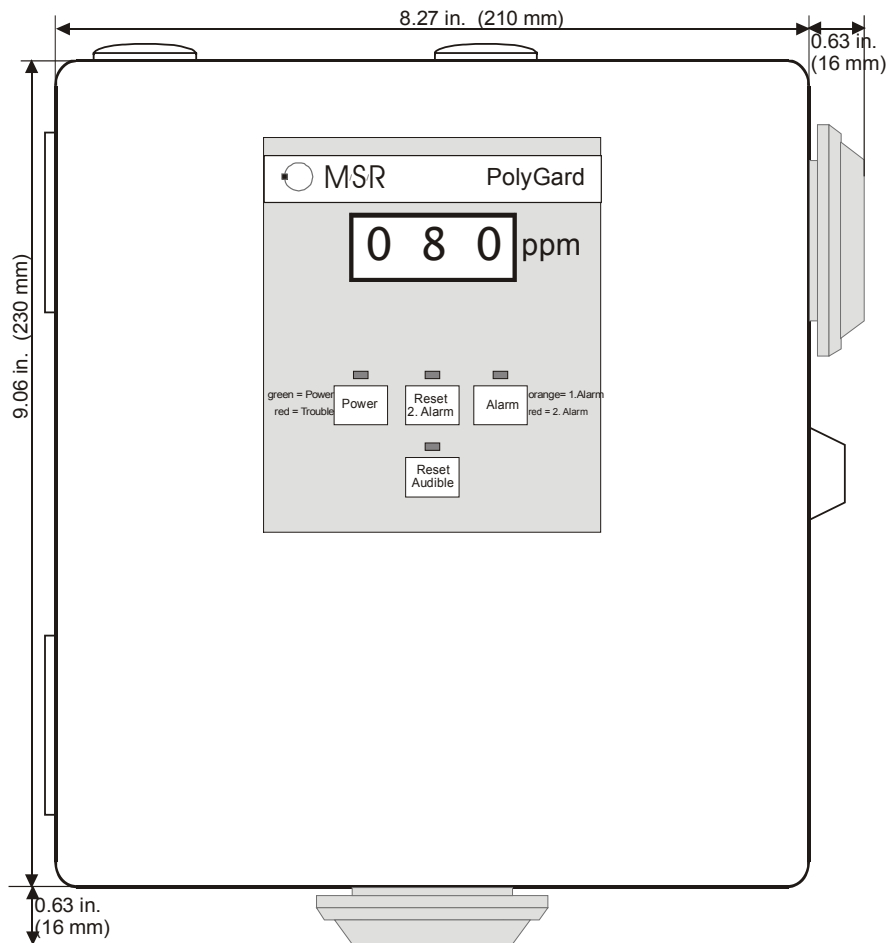
- Add wire and connect between AC neutral "N (leftside)" of power terminal block and "X2 - terminal 4" of motherboard



Assembly  
Fig. 2

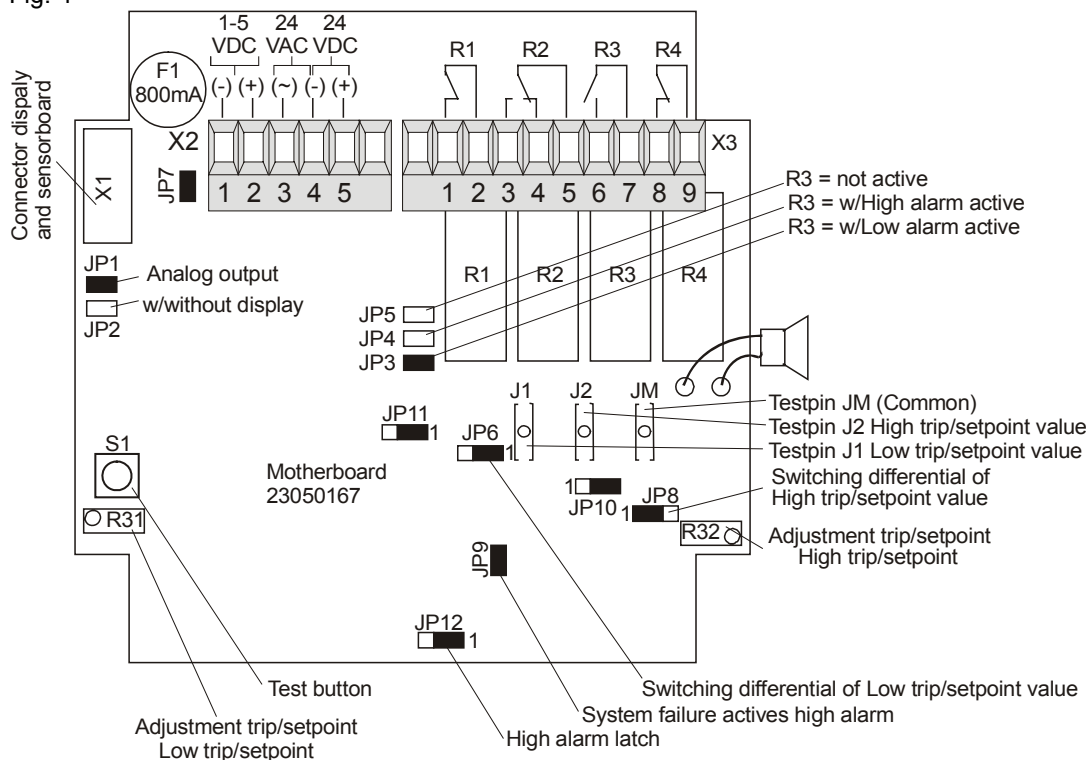


Dimensions  
Fig. 3



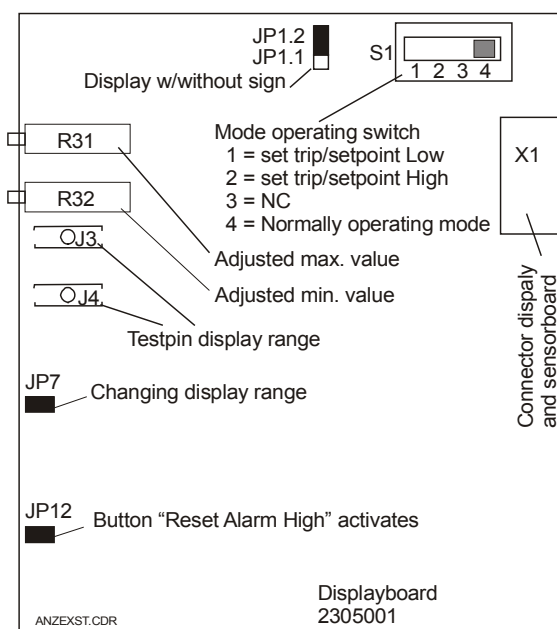
Motherboard

Fig. 4

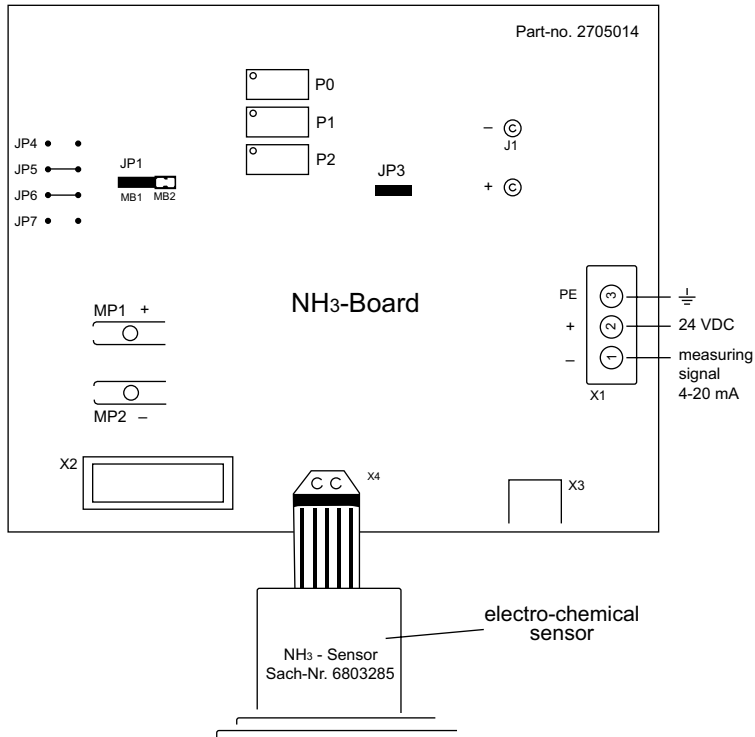


Displayboard

Fig. 5



Sensorboard  
Fig. 6



Pot P0 adjustment zero point 0 ppm (4 mA)

Pot P1 adjustment gain measuring range 300 ppm (20 mA)

Pot P2 adjustment gain measuring range 1,000 ppm (20 mA)

Jumper JP1 measuring range selection:

MP1 = 300 ppm

MP2 = 1,000 ppm

Measuring points MP1(+) and MP2(-): 4 mA = 20 mV  
20 mA = 1 V

## **11 Notes and General Information**

It is important to read this user manual thoroughly and clearly understand the information and instructions. The PolyGard® single point controller must be used within product specification capabilities. The appropriate operating and maintenance instructions and recommendations must be followed.

Due to ongoing product development, MSR reserves the right to change specifications without notice. The information contained herein is based upon data considered to be accurate. However, no guarantee is expressed or implied regarding the accuracy of this data.

### **11.1 Intended product application**

The PolyGard® NH<sub>3</sub> SPC-1120 single point controller is designed and manufactured for control applications for energy savings and OSHA air quality compliance in commercial buildings and manufacturing plants (i.e., detection and automatic exhaust fan control for automotive maintenance facilities, enclosed parking garages, engine repair shops, warehouses with forklifts, fire stations, tunnels, etc.).

### **11.2 Installers' responsibilities**

It is the installer's responsibility to ensure that all PolyGard® single point controller is installed in compliance with all national and local codes and OSHA requirements. Installation should be implemented only by individuals familiar with proper installation techniques and with codes, standards and proper safety procedures for control installations and the latest edition of the National Electrical Code (ANSI/NFPA70). It is also essential to strictly follow all instructions as provided in the user manual.

### **11.3 Maintenance**

It is recommended that the PolyGard® single point controller performance check be done on a routine schedule. Any performance deviations may be serviced based on needed requirements. Re-calibration and part replacement may be implemented in the field by a qualified individual and with the appropriate tools. Alternatively, the easily removable plug-in transmitter card with the sensor may be returned for service to INTEC Controls.

### **11.4 Limited warranty**

MSR and INTEC Controls warrant the PolyGard® single point controller for a period of two (2) years from the date of shipment against defects in material or workmanship. Should any evidence of defects in material or workmanship occur during the warranty period, MSR or INTEC Controls will repair or replace the product at their own discretion, without charge.

This warranty does not apply to units that have been altered, had repair attempted, or been subjected to abuse, accidental or otherwise. The warranty also does not apply to units in which the sensor element has been overexposed or gas poisoned. The above warranty is in lieu of all other express warranties, obligations or liabilities.

This warranty extends only to the PolyGard® single point controller. MSR and INTEC Controls shall not be liable for any incidental or consequential damages arising out of or related to the use of the PolyGard® single point controller.

### **11.5 Return instructions**

If the PolyGard® single point controller needs to be returned to INTEC Controls for service, an RMA number must be obtained prior to sending.